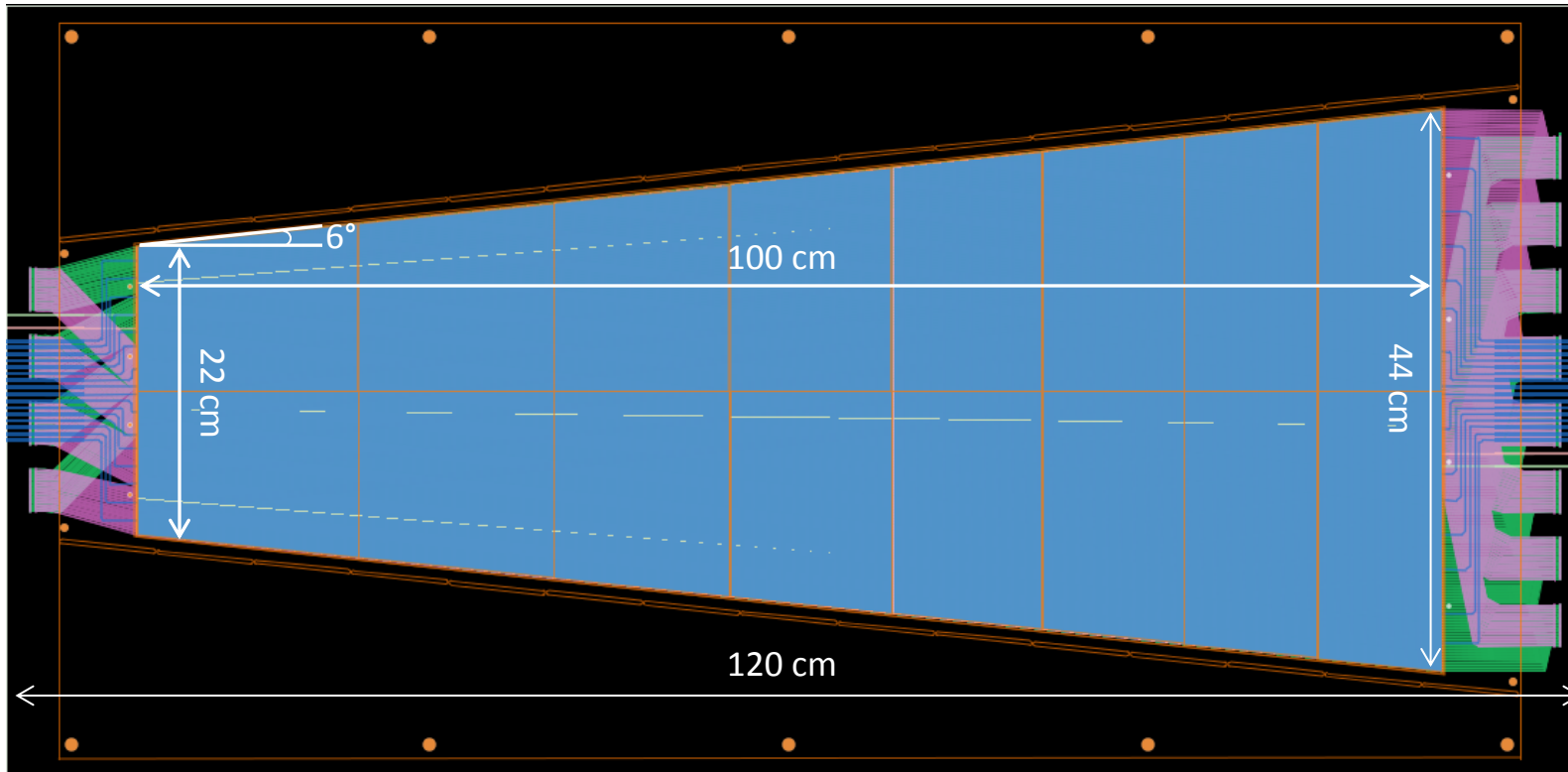


Update on EIC-SoLID Large GEM Prototype

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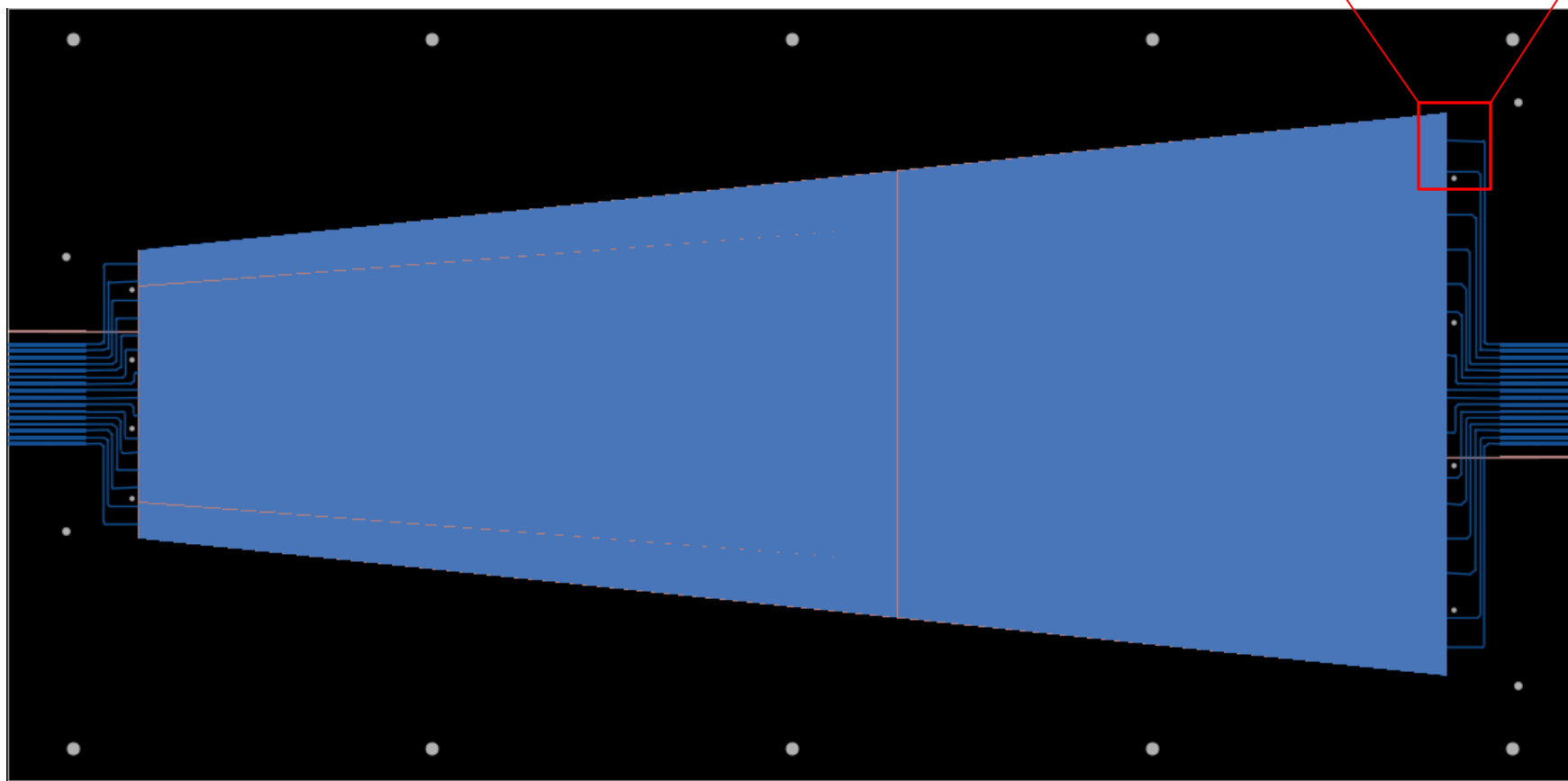
Design for Large GEM prototype for EIC-SoLID

- We have completed the common design for a triple GEM prototype for EIC forward GEM tracker R&D and SoLID GEM trackers @ JLab. The active area similar to CMS GEM for high Eta Muon.
- Seth Saher (UVa undergrad. Mechanical student) works on the design of the GEM foil and the frames
- Design for the readout board was made at CERN (January 2013)
- Production of the GEM and R/O board on going at CERN



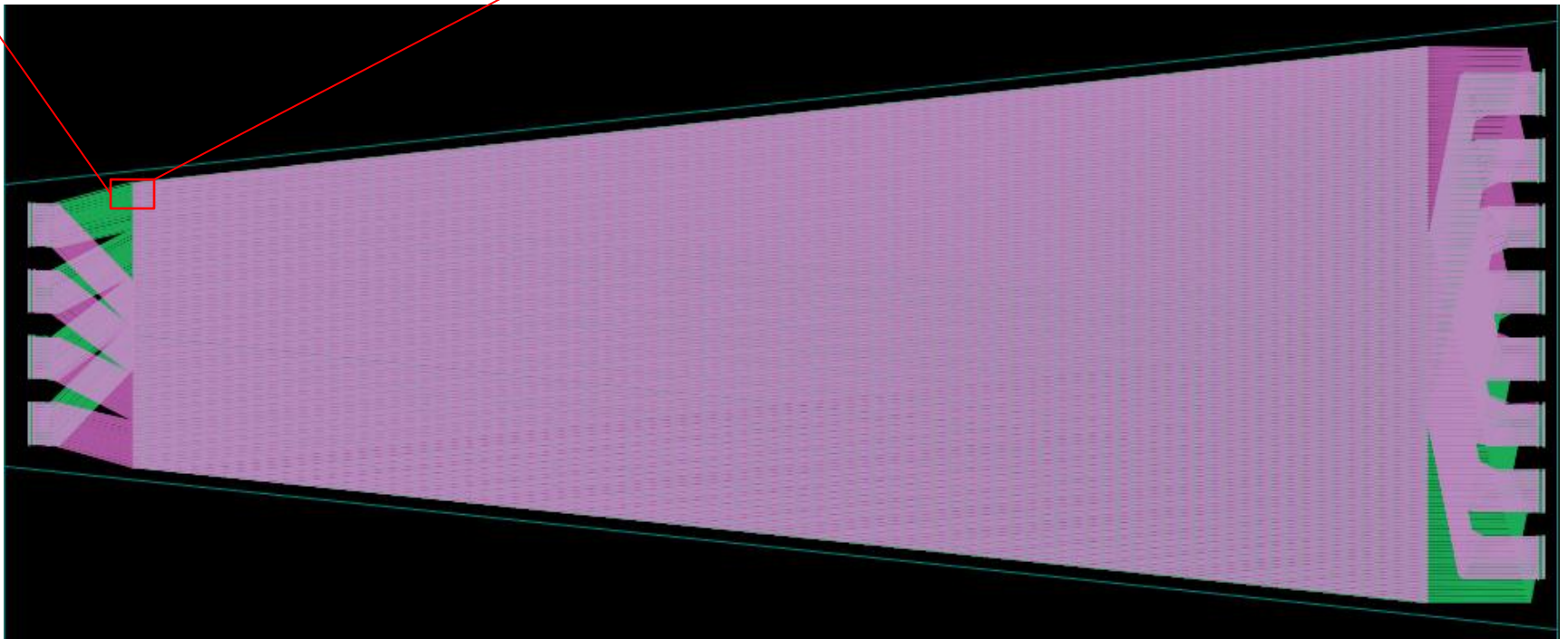
The GEM foil

- The foil is divided into 32 HV sectors of roughly 100 cm^2 with
- The V applied on the 16 sectors from the top and 16 from the bottom
- The chamber from the point of view of HV is divided in two parts



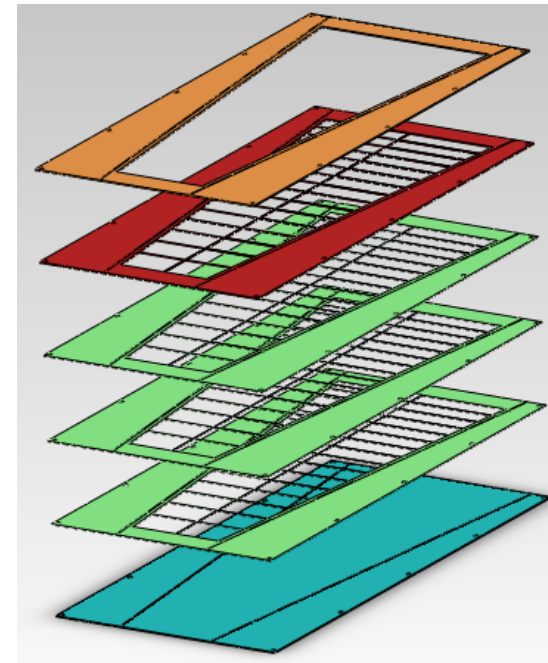
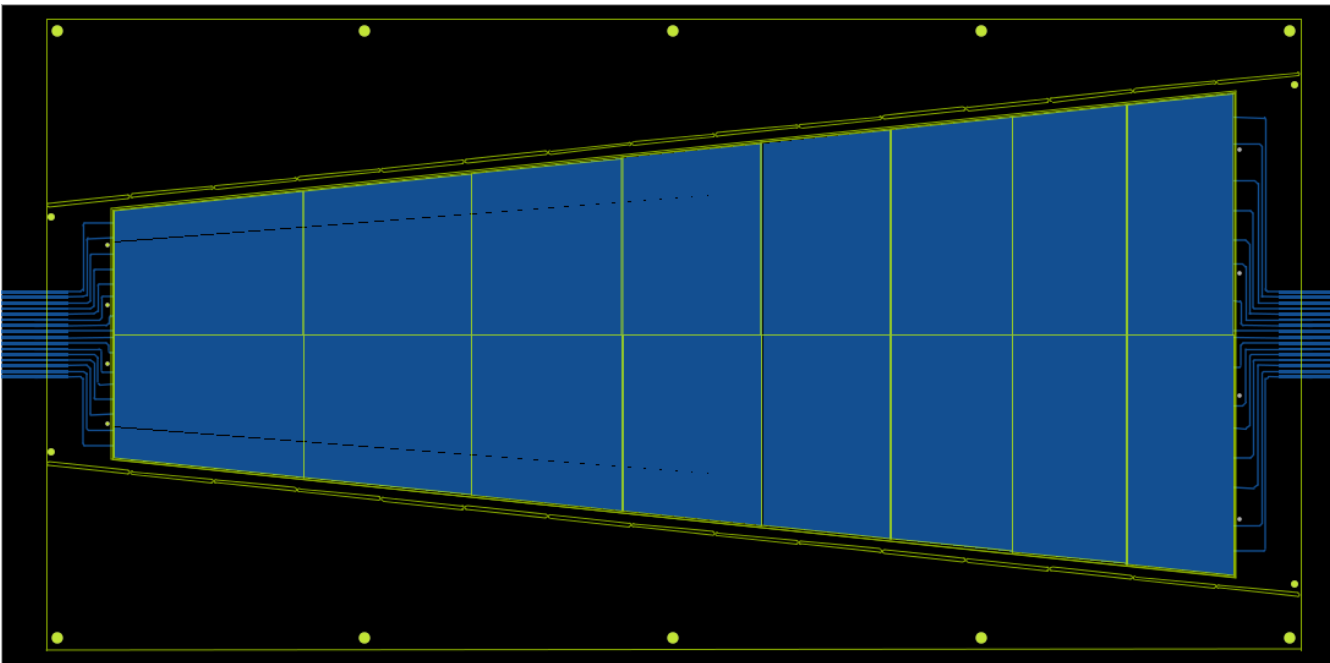
The U/V COMPASS-like readout board

- COMPASS-like 2D stereo angle (12°) U/V readout board
- Pitch = 550 mm, top strips = 140 mm, bottom = 490 mm
- The support for the r/o based on Rohacell foam instead of honeycomb sandwiched between 100 mm fiberglass
- connectors on the top and bottom part of the r/o board



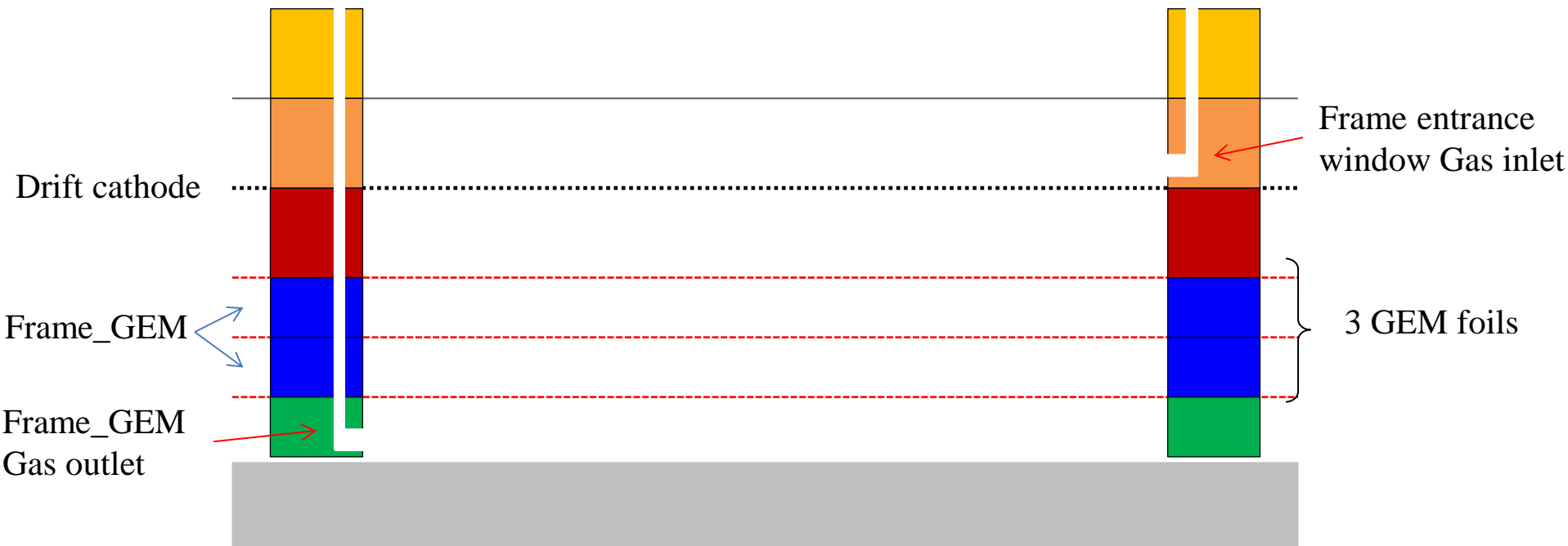
The Frames

- Frames with the standard 300 μm spacers
- Extra frame material for the alignment and to hold the tension on GEM foil during assembly → cut out after
- 8 mm width on the side and 60 mm width on top and bottom
- Positioning holes on top and bottom



The gas flow distribution

- The gas flow system is pretty simple, only the entrance window frame and last GEM frame had inlet and outlet for the gas
- Drift cathode is a GEM foil with copper only on inner side
- Exhaust gas from holes on one side of all frames



To Do

- The GEM foils and readout board are now in production at CERN
- We are going to start the production of the frames from RESARM (Belgium)
- Expect to receive all parts before July → so that we can build the prototype and have it ready for the Fermilab test beam → but this is probably a wishful thinking
- Right now, we are getting ready to start the assembly of the new SBS GEM ($50 \times 50 \text{ cm}^2$) → first chamber expected to start by the end of this month
- We have doubled the size of our clean room and got new equipment for the assembly